New Fire/Smoke Detection and Fire Extinguishing Systems for Aircraft Applications

(An Overview on the FIREDETEX Project)

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Abstract

This paper gives an overview on the FIREDETEX Research Project which deals with the aspects of aircraft fire detection and fire extinguishing. The project consortium consists in a partnership of 12 companies, universities and research facilities from 5 European countries. It is funded by the European Commission within the Framework 5, thematic programme GROWTH.

The specialities of new large passenger aircraft with lower deck facilities like rest rooms, conference rooms or lavatories and a possible future very large passenger aircraft for passenger numbers above 500 with two or even three deck configuration require advanced fire detection means and management to improve the systems' reliability. The FIREDETEX Project will introduce an advanced and reliable detection system in the cargo compartment. In equipment bays, fire detection technologies will be able to recognise smouldering fires and electrical wire overheat.

The halons which are used nowadays as fire extinguishing agents in every modern aircraft deplete the ozone layer and are banned in the Western World by the Montreal Protocol. Future environmentally friendly fire suppression agents must possess at least the same good extinguishing qualities as the halons. They have to be non-toxic to passengers and must have no harmful effect neither on the ozone layer nor contribute to global warming (greenhouse effect). FIREDETEX will face this challenge with a combined watermist/nitrogen extinguishing technology which fulfils the strong environmental requirements. Although earlier studies [1] have shown, that a technology based on watermist is in principle able to cope with the requirements [2] of a future fire suppression system further investigation is needed to solve challenges like freezing of agent, drainage, maintenance or system complexity. A pre-requisite for utilising such techniques is the harmonisation of design and compatibility between the advanced fire detection and the new fire extinguishing system.

The FIREDETEX Project has started in February 2000 and is currently in the concept evaluation phase. This paper focuses on the fire extinguishing related actions of the project.

References

[1] FIREDASS (Fire Detection and Suppression Simulation)
BriteEuram Project, Framework 4, Project No. BE95-1977

[2] Minimum Performance Standards for Aircraft Cargo Compartment Built-In Fire Suppression Systems, FAA Fire Safety Section, International Aircraft Systems Fire Protection Working Group